

Severity of PTSD Symptoms and Its Relationship with Severity of Alcohol-Related Problems in a Sample of Inpatients with Alcohol use Disorder

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ABSTRACT

Severity of PTSD symptoms and its relationship with severity of alcohol-related problems in a sample of inpatients with alcohol use disorder

Objective: The aim of the present study was to evaluate the effect of post-traumatic stress disorder (PTSD) symptoms measured with the PTSD Checklist Civilian (PCL-C) version on the severity of alcohol-related problems while controlling for the effects of anxiety and depression in a sample of inpatients with alcohol use disorder (AUD).

Method: Participants (n=190) were evaluated with the Beck Depression Inventory (BDI), the State-Trait Anxiety Inventory State Subscale (STAI-S), the PTSD Checklist Civilian (PCL-C) Version and the Michigan Alcohol Screening Test (MAST).

Results: Although severity of the state of anxiety predicted the severity of alcohol-related problems in the first and depression in the second step of a linear regression model, when severity of PTSD symptoms was included in the analysis, it was the only independent variable that predicted the severity of alcohol-related problems while the state of anxiety and depression were no longer predictors.

Conclusion: These findings suggest that the severity of PTSD symptoms is related to the severity of alcohol-related problems, independent from severity of state anxiety and depression among inpatients with AUD.

Keywords: Alcohol-related problems, alcohol use disorder, anxiety, depression, PTSD

ÖZET

Yatarak tedavi gören alkol kullanım bozukluğu hastaları örnekleminde TSSB semptomlarının şiddeti ve alkolle ilişkili sorunlarla ilişkisi

Amaç: Bu çalışmanın amacı yatarak tedavi gören alkol kullanım bozukluğu (AKB) hastalarından oluşan bir örnekleminde depresyon ve anksiyetenin etkilerini kontrol ederken, TSSB Kontrol Listesi Sivil (PCL-C) versiyon ile ölçülen travma sonrası stress bozukluğu (TSSB) belirtilerinin alkolle ilişkili sorunların şiddeti üzerine etkisini değerlendirmektir.

Yöntem: Katılımcılar (n=190) Beck Depresyon Envanteri (BDE), Durumluk-Süreklilik Kaygı Envanteri Durumluluk Alt Ölçeği (DSKE-D), TSSB Kontrol Listesi Sivil (PCL-C) versiyon ve Michigan Alkolizm Tarama Testi (MATT) ile değerlendirildi.

Bulgular: Adımsal lineer regresyon modelinde, ilk olarak durumluk anksiyetenin şiddeti ikinci olarak da depresyonun şiddeti alkolle ilişkili sorunları öngörmüşken, TSSB semptomlarının şiddeti analize girildiğinde yalnızca TSSB semptomlarının şiddeti alkolle ilişkili sorunları öngörmekteydi ve artık durumluk anksiyete ve depresyon öngörücü değildi.

Sonuç: Bu bulgular, yatarak tedavi gören AKB hastalarında durumsal anksiyete ve depresyon şiddetinden bağımsız olarak TSSB semptomlarının şiddetinin, alkolle ilişkili sorunların şiddeti ile ilişkili olduğunu göstermektedir.

Anahtar kelimeler: Alkolle ilişkili sorunlar, alkol kullanım bozukluğu, anksiyete, depresyon, TSSB



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INTRODUCTION

Alcohol use disorder (AUD) is an important problem affecting individuals, families, and society by causing physical and mental illnesses (1). The Michigan Alcoholism Screening Test (MAST) is commonly used to assess alcohol-related problems (2). Certain factors may increase the probability of such issues, i.e., older individuals may report these kinds of problems less than youngsters (3), affecting instability and impulsivity that could possibly increase alcohol-related problems through a synergistic effect (4). In addition, the amount of alcohol consumed during the week is positively correlated with severity of alcohol-related problems (3). Nevertheless, Babor et al. (5) reported that amount of alcohol was not always related with risk of having alcohol-related problems and they suggested that it represents a complex interrelation between many variables.

AUD is related with the severity of psychopathology (6,7). It was described that AUD has a negative impact on the course of depression and/or anxiety (8). Nevertheless, there are also studies with opposite findings (9,10). Considering a causal relationship, a recent review suggested that AUD and anxiety disorder or depression are able to initiate each other (11). In addition, the data obtained from clinical studies suggests that anxiety disorder can contribute to the maintenance of and relapse to pathological alcohol use (11). The association between AUD and anxiety and/or depressive disorder in terms of severity of AUD was examined and findings showed that severe AUD was more substantial compared with moderate AUD (8). Moreover, it was found that the severity of alcohol-related problems measured with MAST was also related with the severity of depression, anxiety and general psychopathology (6).

The association between AUD and post-traumatic stress disorder (PTSD) has been established many times previously (1,12-17). AUD is related with poor outcomes for PTSD (8,11,18), as in a college sample, it was observed that alcohol may aid in coping with social impairments related to PTSD symptoms (19). Compared to patients with solely alcohol use, those

with both alcohol use and PTSD respond to treatment less favorably, relapse faster, consume more alcohol during drinking episodes, and experience more heavy drinking days during the post-treatment period (20-24). It is well known that the risk for depression and anxiety increases in persons with PTSD (25,26). Further, among Turkish patients with AUD, frequency of lifetime prevalence of major depression and severity of depressive and anxiety symptoms were found to be higher among patients with lifetime PTSD diagnoses than those without it (27). Therefore, it is important to evaluate the effects of the severity of PTSD symptoms on severity of alcohol-related problems while controlling for the effects of anxiety and depression on inpatients with AUD, the aim of the present study.

METHOD

The study was conducted at the Bakirkoy Training and Research Hospital for Psychiatry, Neurology and Neurosurgery, Alcohol and Drug Research, Treatment and Training Center in Istanbul between August 2014 and June 2015. It is a specialized center for substance use disorders with 84 inpatient beds (36 beds for AUD) and accepts patients from all over Turkey. Patients' written informed consent was obtained after the study protocol was thoroughly explained.

One hundred ninety consecutively admitted male alcohol-dependent inpatients were considered for participation in the study. All participants meet the DSM-5 diagnostic criteria for AUD. Interviews with the study group were conducted after a detoxification period, that is, 3 to 4 weeks after the last day of alcohol use.

Measures

The Spielberger State-Trait Anxiety Inventory (STAI): As a measure of state and traits of anxiety, the Spielberger State-Trait Anxiety Inventory (STAI), a 40-item self-report instrument, was administered (28). The Turkish version of the STAI has been shown to have robust reliability and validity (29).

The Beck Depression Inventory (BDI):

Symptoms and severity of depression were assessed with the Beck Depression Inventory (BDI) (30), Turkish version (31).

Michigan Alcoholism Screening Test (MAST):

The severity of alcohol dependence was determined with the MAST, developed as a 'rapid and effective screening for lifetime alcohol-related problems and alcoholism' for a variety of populations (32). Its focus on drinking behavior and adverse consequences make it a widely used measure for examining significant problems associated with alcohol use in medical, legal, and interpersonal areas of life. It consists of 25 brief true-false items that are self-administered in approximately 10 min. Scoring is accomplished after reverse scoring of four of the 25 items and assigning weighted scores. These weighted scores are then summed; the sum represents a total score reflecting severity of alcohol-related problems. The Turkish version of the MAST is valid and reliable for screening severity of dependence in both alcohol- and drug-dependent patients (33).

The PTSD Checklist Civilian (PCL-C) version:

The PTSD Checklist (PCL) (34) is one of the most commonly used self-report measures of PTSD (34,35). The 17 Likert items correspond to diagnostic criteria B, C, and D for PTSD, as delineated in the DSM-IV (36) (DSM-IV, 1994). Respondents are asked to rate the degree to which they were bothered by symptoms over the previous month (1 [not at all] to 5 [extremely]). The PCL-Civilian (PCL-C) Version anchors items to "stressful experiences" (37). The Turkish version of this scale has been previously validated (38).

Data Analysis

Statistical Packages for the Social Sciences (SPSS) 20.0 for Windows was used for all analyses. Frequencies, percentages, means, and standard deviations were yielded for sociodemographic variables. Chi-square testing was applied to detect differences between categorical variables. Pearson

correlational analyses were conducted to detect correlations between the scales. The linear regression model was performed by considering the MAST score as a dependent variable. For all statistical analyses, *p* values were two-tailed and differences were considered significant at *p*<0.05.

RESULTS

Sociodemographic data is shown in Table 1. Correlation coefficients for MAST scores and ages of first alcohol use (*r*=-0.10, *p*=0.17) and age at problematic alcohol use (*r*=-0.23, *p*<0.001) were below 0.25 (not shown). MAST scores were correlated mildly with PCL-C (*r*=0.396, *p*<0.001), STAI-S (*r*=0.286, *p*<0.001), and BDI (*r*=0.353, *p*<0.001) (Table 2). The mean score of MAST was higher among those with PTSD (*n*=63, 32.19±8.99) according to the PCL-C Version cut-off point of 50 versus those without PTSD (*n*=127, 25.36±10.03) (*t*=-4.57, *p*<0.001). When using a cut-off point of 50, the results of Pearson's Chi-square test indicated that attempted suicide was more common among those with PTSD than those

Table 1: Sociodemographic variables

	Mean	SD
Age	44.69	10.19
Duration of education	9.25	3.65
	n	%
Marital status		
Married	116	61.1
Single	40	21.1
Divorced	34	17.9
Employment		
Not working	55	28.9
Working	65	34.2
Working part-time	26	13.7
Retired	44	23.2

Table 2: Correlations between the scales

	MAST
PCL-C	0.396*
STAI-State	0.286*
BDI	0.353*

**p*<0.001, MAST: Michigan Alcoholism Screening Test, PCL-C: PTSD Checklist Civilian Version, STAI: State-Trait Anxiety Inventory, BDI: Beck Depression Inventory

Table 3: Linear regression model when the severity of alcohol-related problems measured with MAST was the dependent variable and anxiety, depression, and PTSD scores were independent variables

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	p
1	STAI-State	0.256	0.063	0.286	4.089	<0.001
2	STAI-State	0.096	0.078	0.107	1.223	0.223
	BDI	0.255	0.078	0.286	3.278	0.001
3a	STAI-State	0.023	0.081	0.026	0.285	0.776
	BDI	0.125	0.088	0.141	1.416	0.158
	PCL-C	0.215	0.074	0.283	2.891	0.004
3b	STAI	0.053	0.078	0.059	0.675	0.500
	BDI	0.149	0.086	0.167	1.740	0.084
	PCL-C (C dimension)	0.428	0.156	0.239	2.737	0.007

MAST: Michigan Alcoholism Screening Test, BDI: Beck Depression Inventory, STAI: State-Trait Anxiety Inventory State Subscale, PCL-C: the PTSD Checklist Civilian Version, PCL-C (C dimension): PTSD Checklist Civilian Version, Cluster of avoidance symptoms
 Step 1: F=16.72, df=1, 188, p<0.001 Adjusted R²=0.08, R² change=0.082, Step 2: F=14.20, df=2, 187, p<0.001 Adjusted R²=0.12, R² change=0.050,
 Step 3a: F=12.60, df=3, 186, p<0.001 Adjusted R²=0.16, R² change=0.037, Step 3b: F=12.60, df=3, 186, p<0.001 Adjusted R²=0.16, R² change=0.037

without PTSD (42.9% vs. 11.0%, respectively, $\chi^2=25.21$, $p<0.001$). Similarly, the rates of self-mutilative behaviors were greater in patients with PTSD compared to those without PTSD (52.4% vs. 18.2%, respectively, $\chi^2=22.48$, $p<0.001$).

Although severity of the state of anxiety predicted the severity of alcohol-related problems in the first and depression predicted in the second step of a linear regression model, when severity of PTSD symptoms was included in the analysis, it was the only independent variable that predicted the severity of alcohol-related problems while state anxiety and depression were no longer predictors (Table 3).

DISCUSSION

In agreement with the literature (1,39,40), one of the most important findings of the present study was that the severity of PTSD symptoms predicted the severity of alcohol-related problems. Additionally, a conspicuous result was that avoidance symptoms of PTSD were particularly associated with alcohol-related problems. It should be thought that individuals who drank were more likely to have been exposed to traumatic events. With this, traumatic events also cause the drinking of alcohol, and so a vicious cycle may present itself. Nevertheless, this was a cross-sectional study with no intention of evaluating causal relationships.

PTSD in the National Comorbidity Survey shows that the most common comorbidity with PTSD was AUD at a rate of 51.9% (16). Studies related to PTSD were generally conducted in veterans because combat-injured soldiers have been exposed to severe trauma including the witnessing of traumatic events. In a study performed with Canadian military veterans, PTSD hyperarousal symptoms accounted for unique variance in reported alcohol-related problems among male participants (40). That study also revealed that depressive symptoms accounted for unique variance in reported alcohol-related problems and quantity or frequency of alcohol use among male veterans. In contrast, among female veterans, neither PTSD nor depressive symptoms were found to account for significant variance in measures of alcohol-related problems or quantity or frequency of alcohol use (40). In our study, we found that avoidance symptoms of PTSD were associated with alcohol-related problems. The difference between our study and the previously mentioned study (40) in terms of symptoms of a cluster of PTSD might have resulted from trauma types and severity. As the study mentioned earlier was conducted with veterans exposed to severe trauma from combat compared to other types of trauma, hyperarousal symptoms of PTSD might come into prominence in contrast to avoidance symptoms of PTSD observed here. The rates of AUD were found to be higher in chronic

PTSD compared to non-chronic PTSD (15), as well, which may be one of the explanations for the difference between the two studies.

The presence of a positive relationship between lifetime PTSD diagnosis and depression, anxiety, and severity of psychosocial problems related to alcohol dependency was seen in the study of Evren et al. (1). In the present work, we also found that depression and anxiety were predictors for the severity of alcohol-related problems unless PTSD was taken into account. According to the statistical results, depression, anxiety, and PTSD explained the variance related to AUD by 8%, 12%, and 16%, respectively. This situation might have resulted from the overlapping symptoms of PTSD with depression and anxiety or depressive and anxiety symptoms might emerge secondarily to trauma. Previous studies have shown high rates of major depression in patients with PTSD (27,41). Kural et al. (27) demonstrated that among inpatients with AUD, in addition to major depression, suicide attempts also were higher in patients with PTSD compared to those without it. Consistent with our previous studies (17,27), in the present study, we detected higher rates of suicide attempts and self-mutilative behaviors among those with PTSD.

Our study revealed that PTSD predicted alcohol-related problems, yet it had several limitations. For one, it was not possible to establish causal relationships because this study was cross-sectional in nature. Secondly, female patients may have a different

profile concerning the relationship between PTSD and alcohol-related problems (19,42,43). Thirdly, we actually evaluated PTSD symptoms rather than diagnosing PTSD. Future studies for exploring individual vulnerability, such as genetic predisposition and familial history related to response to trauma might ensure more useful data. Additionally, research according to different symptom clusters of PTSD according to DSM-5 will assure important data in this area, as well.

Nevertheless, these findings at least suggest that those with severe alcohol-related problems may have severe PTSD symptoms, regardless of depressive and anxiety symptoms, and a clinician must evaluate the presence of PTSD symptoms whenever alcohol-related problems are pronounced.

Contribution Categories	Name of Author
Development of study idea	C.E., G.U., B.E.
Methodological design of the study	C.E., G.U., B.E.
Data acquisition and process	C.E., G.U.
Data analysis and interpretation	C.E., G.U., B.E.
Literature review	C.E., G.U., B.E.
Manuscript writing	C.E., G.U., B.E.
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REFERENCES

1. Evren C, Can S, Evren B, Saatcioglu O, Cakmak D. Lifetime posttraumatic stress disorder in Turkish alcohol-dependent inpatients: relationship with depression, anxiety and erectile dysfunction. *Psychiatry Clin Neurosci* 2006; 60:77-84. **[CrossRef]**
2. Selzer ML. The Michigan alcoholism screening test: the quest for a new diagnostic instrument. *Am J Psychiatry* 1971; 127:1653-1658. **[CrossRef]**
3. Caetano R, Clark CL. Trends in alcohol-related problems among whites, blacks, and Hispanics: 1984-1995. *Alcohol Clin Exp Res* 1998; 22:534-538.
4. Simons JS, Carey KB, Gaher RM. Liability and impulsivity synergistically increase risk for alcohol-related problems. *Am J Drug Alcohol Abuse* 2004; 30:685-694. **[CrossRef]**
5. Babor TF, Kranzler HR, Lauerman RJ. Social drinking as a health and psychosocial risk factor: Anstie's limit revisited. *Recent Dev Alcohol* 1987; 5:373-402. **[CrossRef]**

6. Evren C, Evren B, Dalbudak E. Personality and psychopathology in relation to severity of alcohol-related problems. *Journal of Dependence* 2008; 9:60-64.
7. Eddie D, Epstein EE, Cohn AM. Pathways to vulnerability for alcohol problem severity in a treatment-seeking sample. *Addict Disord Their Treat* 2015; 14:82-94. **[CrossRef]**
8. Boschloo L, Vogelzangs N, van den Brink W, Smit JH, Veltman DJ, Beekman AT, Penninx BW. Alcohol use disorders and the course of depressive and anxiety disorders. *Br J Psychiatry* 2012; 200:476-484. **[CrossRef]**
9. Rhebergen D, Beekman AT, Graaf Rd, Nolen WA, Spijker J, Hoogendijk WJ, Penninx BW. The three-year naturalistic course of major depressive disorder, dysthymic disorder and double depression. *J Affect Disord* 2009; 115:450-459. **[CrossRef]**
10. Kushner MG, Sher KJ, Erickson DJ. Prospective analysis of the relation between DSM-III anxiety disorders and alcohol use disorders. *Am J Psychiatry* 1999; 156:723-732.
11. Kushner MG, Abrams K, Borchardt C. The relationship between anxiety disorders and alcohol use disorders: a review of major perspectives and findings. *Clin Psychol Rev* 2000; 20:149-171. **[CrossRef]**
12. Birrell L, Newton NC, Teesson M, Tonks Z, Slade T. Anxiety disorders and first alcohol use in the general population. Findings from a nationally representative sample. *J Anxiety Disord* 2015; 31:108-113. **[CrossRef]**
13. Hearld KR, Budhwani H, Chavez-Yenter D. Panic attacks in minority Americans: the effects of alcohol abuse, tobacco smoking, and discrimination. *J Affect Disord* 2015; 174:106-112. **[CrossRef]**
14. Plemenitas A, Kastelic M, Porcelli S, Serretti A, Dolžan V, Kores Plesnicar B. Alcohol dependence and genetic variability in the serotonin pathway among currently and formerly alcohol-dependent males. *Neuropsychobiology* 2015; 72:57-64. **[CrossRef]**
15. Breslau N, Davis GC. Posttraumatic stress disorder in an urban population of young adults: risk factors for chronicity. *Am J Psychiatry* 1992; 149:671-675. **[CrossRef]**
16. Kessler RC, Sonnega A, Bromet E, Hughes M, Nelson CB. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psychiatry* 1995; 52:1048-1060. **[CrossRef]**
17. Evren C, Sar V, Dalbudak E, Cetin R, Durkaya M, Evren B, Celik S. Lifetime PTSD and quality of life among alcohol-dependent men: impact of childhood emotional abuse and dissociation. *Psychiatry Res* 2011; 186:85-90. **[CrossRef]**
18. Driessen M, Meier S, Hill A, Wetterling T, Lange W, Junghanns K. The course of anxiety, depression and drinking behaviours after completed detoxification in alcoholics with and without comorbid anxiety and depressive disorders. *Alcohol Alcohol* 2001; 36:249-255. **[CrossRef]**
19. Tuliao AP, Jaffe AE, McChargue DE. Alcohol expectancies, posttraumatic stress disorder, and alcohol use in college students with a history of childhood trauma. *J Dual Diagn* 2016; 12:4-14. **[CrossRef]**
20. Jacobsen LK, Southwick SM, Kosten TR. Substance use disorders in patients with posttraumatic stress disorder: a review of the literature. *Am J Psychiatry* 2001; 158:1184-1190. **[CrossRef]**
21. Brown PJ, Recupero PR, Stout R. PTSD Substance abuse comorbidity and treatment utilization. *Addict Behav* 1995; 20:251-254. **[CrossRef]**
22. Brown PJ, Stout RL, Mueller T. Substance use disorder and posttraumatic stress disorder comorbidity: Addiction and psychiatric treatment rates. *Psychol Addict Behav* 1999; 13:115-122. **[CrossRef]**
23. Ouimette PC, Finney JW, Moos RH. Two-year posttreatment functioning and coping of substance abuse patients with posttraumatic stress disorder. *Psychol Addict Behav* 1999; 13:105-114. **[CrossRef]**
24. Read JP, Brown PJ, Kahler CW. Substance use and posttraumatic stress disorders: symptom interplay and effects on outcome. *Addict Behav* 2004; 29:1665-1672. **[CrossRef]**
25. Breslau N, Davis GC, Peterson EL, Schultz LR. A second look at comorbidity in victims of trauma: the posttraumatic stress disorder-major depression connection. *Biol Psychiatry* 2000; 48:902-909. **[CrossRef]**
26. Breslau N, Davis GC, Schultz LR. Posttraumatic stress disorder and the incidence of nicotine, alcohol, and other drug disorders in persons who have experienced trauma. *Arch Gen Psychiatry* 2003; 60:289-294. **[CrossRef]**
27. Kural S, Evren E, Can S, Cakmak D. Posttraumatic stress disorder among substance dependents and its relationship with sociodemographic and clinical characteristics. *Bulletin of Clinical Psychopharmacology* 2004; 14:1-8. (Turkish)
28. Spielberger C, Gorsuch R, Lushene R. *Manual for the State-Trait Anxiety Inventor*. Palo Alto (Calif): Consulting Psychologist Press, 1970.
29. Oner N, Le Compte A. *Manual of State-trait Anxiety Inventory*, Istanbul: Bosphorus University Press, 1985. (Turkish)
30. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961; 4:561-571. **[CrossRef]**

31. Hisli N. Reliability and validity of Beck Depression Inventory among university students. *Turkish Journal of Psychology* 1989; 7:3-13. (Turkish)
32. Gibbs LE. Validity and reliability of the Michigan alcoholism screening test: a review. *Drug Alcohol Depend* 1983; 12:279-285. **[CrossRef]**
33. Coskunol H, Bagdiken I, Sorias S, Saygili R. Validity and reliability of the Michigan Alcoholism Screening Test (Turkish version). *Ege Tip Dergisi* 1995; 34:15-18.
34. Weathers F, Litz B, Herman D, Huska J, Keane T. The PTSD Checklist: Reliability, validity, diagnostic utility. Paper presented at the Annual Meeting for the International Society for Traumatic Stress Studies. In San Antonio, Texas, 1993.
35. Elhai JD, Gray MJ, Kashdan TB, Franklin CL. Which instruments are most commonly used to assess traumatic event exposure and posttraumatic effects?: A survey of traumatic stress professionals. *J Trauma Stress* 2005; 18:541-545. **[CrossRef]**
36. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-IV*. 4th ed. Washington, DC: American Psychiatric Association, 1994.
37. Weathers F, Litz B, Herman D, Huska J, Keane T. The PTSD checklist-civilian version (PCL-C). Boston, MA: National Center for PTSD, Behavioral Sciences Division, 1994.
38. Kocabasoglu N, Ozdemir A, Yargic I, Geyran P. The validity and reliability of Turkish "PTSD Checklist - Civilian Version" (PCL-C). *New Symposium* 2005; 43:126-134. (Turkish)
39. Goldstein RB, Smith SM, Chou SP, Saha TD, Jung J, Zhang H, Pickering RP, Ruan WJ, Huang B, Grant BF. The epidemiology of DSM-5 posttraumatic stress disorder in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions-III. *Soc Psychiatry Psychiatr Epidemiol* 2016; 51:1137-1148. **[CrossRef]**
40. Fetzner MG, Abrams MP, Asmundson GJ. Symptoms of posttraumatic stress disorder and depression in relation to alcohol-use and alcohol-related problems among Canadian forces veterans. *Can J Psychiatry* 2013; 58:417-425. **[CrossRef]**
41. Guloglu B. Psychiatric symptoms of Turkish combat-injured non-professional veterans. *Eur J Psychotraumatol* 2016; 7:29157. **[CrossRef]**
42. Brady KT, Randall CL. Gender differences in substance use disorders. *Psychiatr Clin North Am* 1999; 22:241-252. **[CrossRef]**
43. Timko C, Finney JW, Moos RH. The 8-year course of alcohol abuse: gender differences in social context and coping. *Alcohol Clin Exp Res* 2005; 29:612-621. **[CrossRef]**